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CHEMICALS IDENTIFIED IN HUMAN BIOLOGICAL MEDIA

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PAPER

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The program *Chemicals Identified in Human Biological Media* was inspired by concerns over the need for a centralized source of human body-burden data. Historically, this information, which is needed by research and regulatory agencies involved in the protection of human health, has not been easy to retrieve. The development of this human body-burden data under the direction of Cindy Stroup, U.S. Environmental Protection Agency (EPA), and Herman Kraybill, National Cancer Institute (NCI), has been supported through the NCI/EPA Collaborative Program. Through an interagency agreement between EPA and the U.S. Department of Energy (DOE), the preparation, maintenance, and distribution of the file are being done by the Chemical Effects Information Center in the Information Center Complex, Information Division, at Oak Ridge National Laboratory.

I am glad to have this opportunity to tell you of our recent achievements in this program. I think it will be useful for me to review the

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scope and structure of the file and, during this discussion, to highlight some unique features and new developments.

Sources of data for *Chemicals Identified in Human Biological Media* are from the world literature, retrospective to 1974. Manual searches for current literature are routinely done in approximately 60 periodicals. Articles with appropriate data are selected for inclusion in the data base. We have collected nearly 3800 documents; information from approximately 1500 of these documents is in the data base at the present time.

The documents that are selected contain data on body burdens of various chemicals that have been measured in human tissues and body fluids. The data base contains information on 750 chemicals. Approximately 250 of these were added since this time last year. At the time of the last publication, approximately 10% of the total documents in the file concerned pesticides; 30%, drugs; and 40%, metals. The remaining 20% were about other substances, including industrial chemicals and organics which are of interest to NCI and EPA.

Let us look specifically at how the data which we extract are incorporated into the data base and, ultimately, in the published version. The data included are bibliographic, numeric, and textual. Many large files, such as Chemical Abstracts and Biological Abstracts, contain primarily bibliographic information and abstracts. There are approximately 30 data elements, or "fields." Each field contains specific information from the source document. There is general information on language, type of publication, and identification numbers as well as bibliographic and chemical data.

In the past year, we have completed a computerized file of information on all the chemicals in the data base. This file, which contains CAS preferred names, registry numbers, synonyms, formulae, and chemical properties with code numbers specific for each chemical, allows accurate and rapid input of this information into the data base. In addition, the data base contains tissue levels (mean, range), protocols, analysis, number of cases, and information on toxicity, pathology, and health.

In January, our second annual report was distributed to over 800 people and institutions. It contains more than 1900 records, which are displayed in a computer-generated tabular format. One feature of this publication is that it provides the user with various ways to search for information. Records dealing with a specific chemical can be located in various ways by using different listings and directories provided in the document. In addition, there are author, corporate authority, tissue, and keyword indices.

When we began work on this data base, we hoped that ultimately it would be available to on-line users. In May of this year, the data base became available on-line to RECON users. RECON is DOE's computerized information retrieval system, which provides remote terminal access to a variety of data bases. This system, originally developed for NASA by Lockheed, was purchased by the Atomic Energy Commission in the late 1960's (for Nuclear Science Abstracts) and was based at Oak Ridge. Dial-up access began as a regular service in 1976. The system is used by technical libraries, information centers, scientists, and engineers — in all over 600 users. We are working with the National Library of Medicine on plans for having the file on-line there. There are also plans to

incorporate some of the information into the Toxicology Data Base at the National Library of Medicine. A tape has been made available to the Commission of the European Communities, which plans to integrate our material in its Environmental Chemicals Data and Information Network. The file will soon be available from Lockheed's DIALOG Information Retrieval Service. This commercial information service has agreed to put the data base in their system at no cost to us.

Levels of chemicals in feral and food animal populations are indicators of both environmental and subsequent human exposures. This concern has prompted the development of a companion data base, *Chemicals Identified in Feral and Food Animals*. Approximately 45 periodicals have been identified as appropriate sources of data. Data elements and tabular display are essentially identical to those used in the human file. We have 300 documents on hand and have begun extractions. We will publish an annual report on some of this material for 1981.

In July, questionnaires were sent to the people who have received the annual publications of the data base. In addition to updating the mailing list, we hoped to learn how many people have access to and use the document, how it is being used, and, most important, how the document can better suit the users' needs. We have not finished compiling the results of this survey, but I would like to share with you what we have learned so far. Over one-third of the questionnaires have been returned, and the comments have been overwhelmingly positive. In most cases, the document is "housed" in private offices and libraries. Over 24,000 people have access to the document. It has had various uses in risk and exposure

assessment and as a valuable tool in research and academia. The users' comments have been most gratifying to all of us involved with the project — the document *is* being widely used and is meeting the users' needs.

In addition, many users indicated that they will use the on-line version of the data base. Several pointed out the omission of their favorite chemical, drug, or tissue — in many of these cases, the particular substances have already been included for the next publication. We are always willing to add pertinent information that is brought to our attention. For example, next year's (1982) publication will include data from a new source, the National Environmental Specimen Bank. In addition, we are continually inputting data from the documents we have on hand, covering 1974 to the present time.